

What is claimed is:

1. A method for fabricating a III-V Group compound semiconductor comprising a step of forming on a GaAs substrate by epitaxial growth an  $\text{Al}_x\text{Ga}_{1-x}\text{As}$  multilayer structure ( $0 \leq x < 1$ ) including a structure obtained by overlaying on a first layer of lower Al content a  
5 second layer of higher Al content, in which step the second layer is epitaxially grown on the first layer at a slower epitaxial growth rate than that used to epitaxially grow the first layer.
2. A method for fabricating a III-V Group compound semiconductor as claimed in claim 1, wherein the first layer is a buffer layer formed on the GaAs substrate.  
  
10 3. A method for fabricating a III-V Group compound semiconductor as claimed in claim 1 or 2, wherein the first layer is a GaAs buffer layer formed on the GaAs substrate.
4. A method for fabricating a III-V Group compound semiconductor as claimed in claim 1, 2 or 3, further comprising a step of forming on the second layer by epitaxial growth  
15 at least one  $\text{Al}_{yj}\text{Ga}_{1-yj}\text{As}$  layer ( $0 \leq yj < 1, j = 1, 2, \dots$ ).  
  
20 5. A method for fabricating a III-V Group compound semiconductor comprising a step of successively epitaxially growing thin films to fabricate a III-V Group compound semiconductor composed of a buffer layer having a multilayer structure of thin-film layers of compositions represented by  $\text{Al}_{xi}\text{Ga}_{1-xi}\text{As}$  ( $0 \leq xi < 1, i = 1, 2, \dots n$ ) formed on a GaAs substrate and an upper multilayer structure of layers of compositions represented by  $\text{Al}_{yj}\text{Ga}_{1-yj}\text{As}$  ( $0 \leq yj < 1, j = 1, 2, \dots$ ) formed on the buffer layer, wherein the Al content of an uppermost thin-film layer among the buffer layers is lower than the Al content of an adjacent  
25 upper multilayer structure layer formed on the uppermost thin-film layer, in which step a growth rate of the adjacent layer is made slower than a growth rate of the uppermost layer.

6. A method for fabricating a III-V Group compound semiconductor as claimed in claim 5, wherein the buffer layer is formed so that the Al contents of its thin-film layers increase stepwise from the GaAs substrate toward the upper multilayer structure.